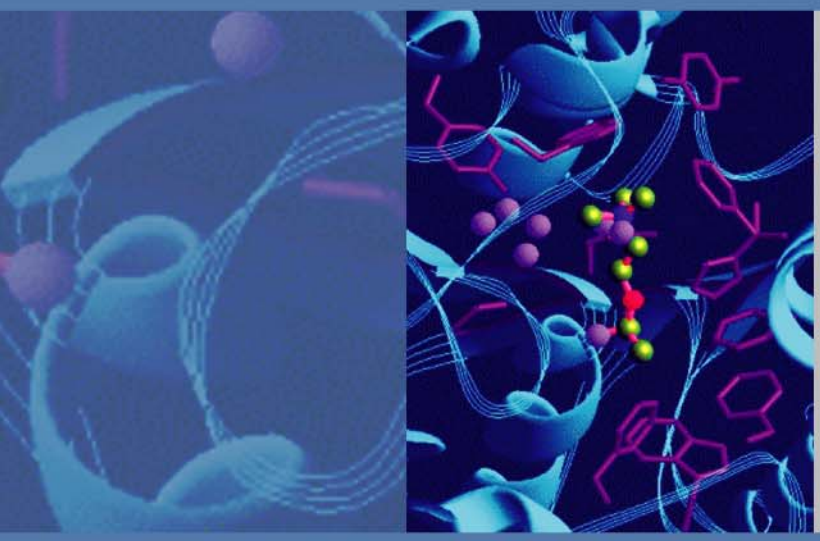

Gas Chromatography

TriPlus

Site Preparation and Installation Requirements

Preinstallation Requirements Guide

P/N 317 110 42 Revision B April 2009

Thermo SCIENTIFIC

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TriPlus Autosampler Preinstallation Guide

This guide gives you the information you need to prepare your site for the installation of the TriPlus autosampler.

Contents

- Entrance
- Space and Load Requirements
- Power Requirements
- Technical Assistance
- Operating Environment
- Instrument Arrival
- Installation
- Installation Process

CAUTION This guide does not includes the information to prepare your lab for the installation of your gas chromatographic system. You can find all the instruction in the **Site Preparation and Installation Manual** of your GC system.

TriPlus autosampler operates reliably under controlled environment conditions. Operating or maintaining a system outside the specifications outlined in this guide may cause many different types of system failures. The repair of such failures is specifically excluded from the standard warranty and service contract coverage.

Note In addition to the information in this guide, you must also obey the building and safety rules and regulations for construction that apply in your area.

Writing Conventions for TriPlus

As **X-axis** the longitudinal crossrail is intended.

As **Y-axis** the orthogonal crossrail is intended.

As **Z-axis** the turret is intended.

Entrance

The entrance to your facility and the width of all hallways, elevators, and doorways should be at least 80 cm (32 in.). However, you should allow additional room for maneuvering the system around corners, into elevators, or through doorways.

TriPlus autosampler is shipped in a container with these approximate dimensions:

Table 1. Container Dimensions

Container	Length	Width	Height	Mass
TriPlus with standard X-axis	80 cm (32 in.)	100 cm (40 in.)	42 cm (17 in.)	45-55 kg (99-122 lbs)
TriPlus with extended X-axis	80 cm (32 in.)	140 cm (56 in.)	67 cm (27 in.)	60 kg (132 lbs)

Space and Load Requirements

TriPlus autosampler has to be installed on the top of the GC. Use the following table to verify and determine the space and mass requirements for the instrument of your GC system.

IMPORTANT The measure reported in the tables are rounding-up for excess.
The tables do not include optional instruments e.g. computers, printers, etc. The GC system should be placed on a workbench that has minimum dimensions of 0.75×2 m (2.5×6 ft.). The workbench must also be capable of supporting the mass of the GC system, TriPlus and eventual optional instruments.
The area behind the instrument should be a minimum of 30 cm (12 in.).
Before switching on TriPlus, move the crossrails to verify the absence of obstacles during the moviments of the sampler.

Table 2. Space and Mass Requirements

Instrument	Height		Width		Depth		Mass	
	cm	in.	cm	in.	cm	in.	kgs	lbs
TriPlus (standard X-axis)	67	27	87 (1)	35	78 (2)	31	25(3)	56
TriPlus (extended X-axis)	67	27	122(1)	48	78 (2)	31	30(3)	67

(1) The width is referred to the longitudinal crossrail (X-axis).

(2) 200 mm (8 in.) of the orthogonal crossrail (Y-axis) are protruding the rear of the GC.

(3) It includes the maximum configuration and the power module.

GC System + TriPlus Configuration

The main GC System +TriPlus configurations are reported in Table 3:

Table 3. GC System +TriPlus Configurations

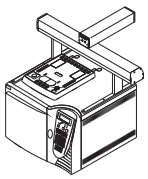
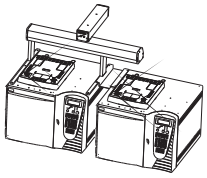
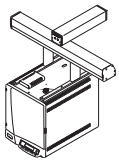
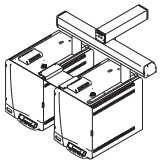
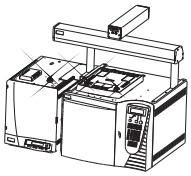
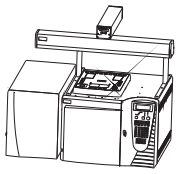
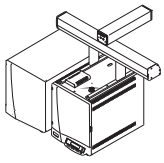
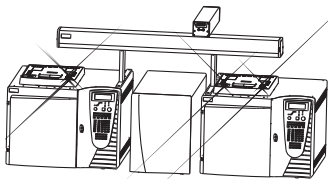
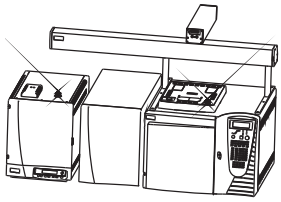
Configuration	Description
	TRACE GC Ultra + TriPlus (Use TriPlus with standard or extended X-axis)
	TRACE GC Ultra + TRACE GC Ultra + TriPlus (Use TriPlus with standard or extended X-axis)
	FOCUS GC + TriPlus (Use TriPlus with standard or extended X-axis)
	FOCUS GC + FOCUS GC + TriPlus (Use TriPlus with standard or extended X-axis)
	FOCUS GC + TRACE GC Ultra+ TriPlus (Use TriPlus with standard or extended X-axis)
	DSQ II + TRACE GC Ultra+ TriPlus PolarisQ+ TRACE GC Ultra + TriPlus (Use TriPlus with standard or extended X-axis)
	DSQ II + FOCUS GC + TriPlus PolarisQ + FOCUS GC + TriPlus (Use TriPlus with standard or extended X-axis)

Table 3. GC System +TriPlus Configurations, continued

Configuration	Description
	TRACE GC + DSQ II + TRACE GC Ultra+ TriPlus TRACE GC + PolarisQ + TRACE GC Ultra+ TriPlus (Only use TriPlus with extended X-axis)
	FOCUS GC + DSQ II + TRACE GC Ultra+ TriPlus FOCUS GC + PolarisQ + TRACE GC Ultra+ TriPlus (Only use TriPlus with extended X-axis)

GC System + TriPlus Configuration Space and Mass Requirements

TriPlus autosampler has to be installed on the top of the GC. Use the following tables to determine the space and mass requirements according to your GC system + TriPlus configuration.

IMPORTANT The dimensions reported in the tables are rounding-up for excess.

Table 4. Overall Dimensions of the GC System + TriPlus with Standard X Axis Configuration

Configuration	Height		Width		Depth		Mass	
	cm	in.	cm	In.	cm	In.	kg	lbs
TRACE GC + TriPlus	112	45	87	35	86	34	73	161
TRACE GC + TRACE GC Ultra+ TriPlus	112	45	131	52	86	34	121	267
FOCUS GC + TriPlus	112	45	87	35	73	29	55	122
FOCUS GC + FOCUS GC + TriPlus	112	45	110	44	73	29	85	188
FOCUS GC + TRACE GC Ultra + TriPlus	112	45	100	43	86	34	103	227
DSQ II + TRACE GC Ultra + TriPlus	112	45	128	51	86	34	118	260
PolarisQ + TRACE GC Ultra + TriPlus	112	45	123	49	86	34	118	260
DSQ II + FOCUS GC + TriPlus	112	45	128	51	73	29	100	221
PolarisQ + FOCUS GC + TriPlus	112	45	123	49	73	29	100	221

Table 5. Overall Dimensions of the GC System + TriPlus with Extended X Axis Configuration

Configuration	Height		Width		Depth		Mass	
	cm	in.	cm	In.	cm	In.	kg	lbs
TRACE GC Ultra + TriPlus	112	45	122	48	86	34	78	172
TRACE GC Ultra + TriPlus	112	45	131	52	86	34	126	278
FOCUS GC + TriPlus	112	45	122	48	73	29	60	133
FOCUS GC + FOCUS GC + TriPlus	112	45	122	48	73	29	90	199
FOCUS GC + TRACE GC Ultra + TriPlus	112	45	122	48	86	34	108	238
DSQ II + TRACE GC Ultra + TriPlus	112	45	128	51	86	34	123	272
PolarisQ + TRACE GC Ultra + TriPlus	112	45	123	49	86	34	123	272
DSQ II + FOCUS GC + TriPlus	112	45	128	51	73	29	105	232
PolarisQ + FOCUS GC + TriPlus	112	45	123	49	73	29	105	232
TRACE GC Ultra + DSQ II+ TRACE GC Ultra + TriPlus	112	45	161	64	86	34	171	377
FOCUS GC + DSQ II+ TRACE GC Ultra + TriPlus	112	45	135	53	86	34	153	336
TRACE GC Ultra + PolarisQ + TRACE GC Ultra + TriPlus	112	45	156	62	86	34	171	377
FOCUS GC + PolarisQ + TRACE GC Ultra + TriPlus	112	45	130	52	86	34	171	377

Power Requirements

This paragraph gives details on the power requirements.

Power Line

CAUTION The power line and the connections between the instruments must maintain good electrical grounding. Poor grounding represents a danger for the operator and may seriously affect the instrument performance.
Do not connect the TriPlus autosampler to lines feeding devices of a heavy-duty nature, such as motors, UV lamps, refrigerators, air compressors and other devices that can generate disturbances.
Pay attention not to leave any cable connecting the sampling unit and the chromatographic system or the power cord close to the GC hot air vents.

Power Module

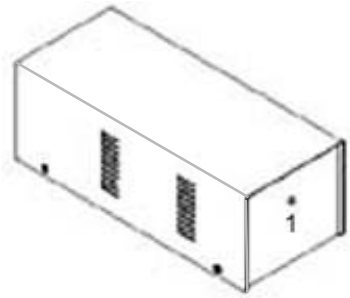
The TriPlus autosampler must be electrically supplied by using a dedicated power supply module.

CAUTION The Power Module should be placed on a sturdy, level bench with adequate access to the main power switch.

Front Panel

The front panel consists of an indicator, as shown in Figure 1, which lights up when the power module is switched On.

Figure 1. Power Module Front Panel

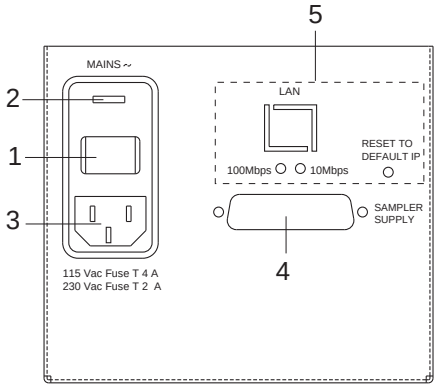


1. Light Indicator

Rear Panel

The rear panel includes the parts shown in Figure 2.

Figure 2. Power Module Rear Panel



Where:

1 = On/Off Switch

2 = Voltage Selector

3 = Power Supply Lead

4 = 25-pin connector marked **SAMPLER SUPPLY** to electrically supply the autosampler.

5 = Option marked **LAN** (**Local Area Network**) for the network connection of the TriPlus autosampler.

LAN Option

To set the IP address and the LAN communication port, follow the instructions reported in the **TriPlus Autosampler Operating Manual.**

Electrical Specifications

Power Supply	115/230 V ac +/-10%; 50/60 Hz; 220 VA. Selectable through a Voltage Selector after replacing the appropriate fuses.
Fuses	• 4A time-lag IEC127/III (5 x 20 mm) for 115 Vac power supply • 2A time-lag IEC127/III (5 x 20 mm) for 230 Vac power supply

Voltage Selector

The configuration of the instrument power supply is determined by the position of the voltage selector **2** of Figure 3. The selector is protected by a removable cover provided with a small window through which the selected power can be read.

Voltage Selector Position	Description
115	115 V ac +/- 10% power supply
230	230 V ac +/- 10% power supply

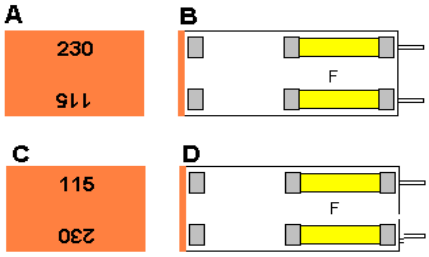
The voltage selector is factory configured to 230 V. Before connecting the Power Module to the power supply, make sure that the selector configuration is compatible with the mains power. In case it is not, change the voltage configuration.

❖ To Change the Voltage Configuration

CAUTION Before changing the configuration of the Voltage Selector verify that the power cable has been disconnected.

1. Remove the cover.
2. Take the voltage selector out of its seat. The selector appears as schematically shown in Figure 3.

Figure 3. Voltage Selector Configuration



A and **B** are the front views with the fuses **F** of the Selector in 230 Vac configuration.

C and **D** are the front views with the fuses **F** of the Selector in 115 Vac configuration.

3. Remove the existing fuses.
4. Install those suitable for the new configuration in the correct position according to the information reported in"Electrical Specifications" on page 11.
   Chapter 1.
5. Introduce the power selector into its seat
6. Put the cover on again.

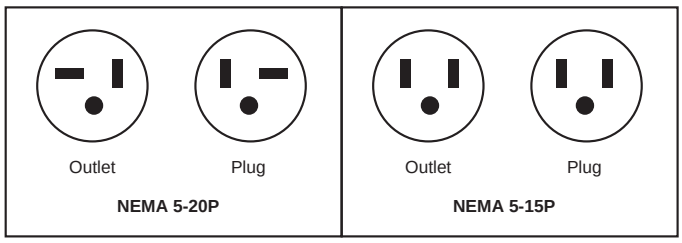
Wall Outlets

The power cable from the power module is approximately 3 m (9 ft) long.

The 120 V ac systems are fitted with U.S. standard National Electronics Manufacturers Association (NEMA) 5-20P power plugs. A NEMA 5-20P power plug and its corresponding outlet are rated at 20 A and 125 V ac.

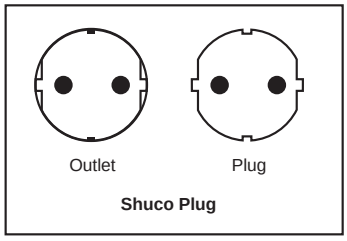
The power cables from the personal computer, monitor, and printer are approximately 2 m (6 ft) long. The 120 V ac systems are fitted with NEMA 5-15P plugs. For optional instruments, the plug requirements may vary. Refer to your product's user manual for specifications. Figure 4 shows the NEMA power plugs and outlets.

Figure 4. NEMA 5-20P and 5-15P Power Plugs and Outlets: 120 V ac



The 230 V ac systems are fitted with Shuco German-type power plugs. Plug requirements are dictated by country. Figure 5 shows the Shuco power plug and outlet.

Figure 5. Shuco 230 V ac Power Plugs and Outlets



CAUTION You should never connect the GC system and the TriPlus to the same electrical wall outlet. You will run the risk of overloading the circuit.

Table 6 shows maximum current requirements for TriPlus and GC system.

Table 6. Maximum Current Requirements for the GC + TriPlus Configuration

Instrument	Maximum Current (A) at 120 V ac	Maximum Current (A) at 230 V ac
TriPlus	2	1
TRACE GC Ultra + TriPlus	22	11
TRACE GC Ultra + TRACE GC Ultra + TriPlus	42	21
FOCUS GC + TriPlus	22	11
FOCUS GC + FOCUS GC + TriPlus	42	21
FOCUS GC + TRACE GC Ultra + TriPlus	42	21
DSQ II + TRACE GC Ultra + TriPlus	37	19
PolarisQ + TRACE GC Ultra + TriPlus	37	19
DSQ II + FOCUS GC + TriPlus	37	21
PolarisQ + FOCUS GC + TriPlus	37	21
TRACE GC Ultra + DSQ II+ TRACE GC Ultra + TriPlus	57	29
FOCUS GC + DSQ II+ TRACE GC Ultra + TriPlus	57	29
TRACE GC Ultra + PolarisQ + TRACE GC Ultra + TriPlus	57	31
FOCUS GC + PolarisQ + TRACE GC Ultra + TriPlus	57	31

Technical Assistance

Occasionally, unacceptable quality in line power sources may adversely affect the operation of a GC system. It is the user's responsibility to correct line voltage problems. Specifying power conditioning equipment is a complex task that is best handled by a company or consultant specializing in that field. Contact your Thermo Fisher Scientific Field Service Engineer (FSE) for assistance in locating a power consultant.

Operating Environment

The operating environment in your laboratory is affected by such factors as temperature, humidity, particulate matter, and electrostatic discharge. It is your responsibility to provide an acceptable operating environment for your TriPlus autosampler. Attention to the operating environment will ensure continued high performance of your TriPlus.

Environmental Conditions

- Internal use
- Up to 2000 meters altitude
- Temperature 18 to 30°C
- Maximum relative humidity between 30% and 85%
- Voltage variations must not exceed the nominal voltage by ± 10%
- Transient overloads in compliance with installation categories II
- Pollution degree according to IEC 664 (3.7.3) 2
- Protection degree IP00

Cooling Requirements

There must be a good flow of air around the system, and the air conditioning must be capable of maintaining a constant temperature (within the operational limits). Any costs for air conditioning are more than offset by good sample throughput and reduced repair costs.

CAUTION Do not directly expose the GC system to any cooling duct outlets.

The air conditioning load for a basic TriPlus autosampler is about 220 W (752 Btu h^{-1}). Table 7 shows the approximate heat output for the GC system.

Table 7. Heat Output: for GC + TriPlus Configuration

Instrument	Heat Output (in BTU h^{-1})
TriPlus	752
TRACE GC Ultra + TriPlus	7352
TRACE GC Ultra + TRACE GC Ultra + TriPlus	13952
FOCUS GC + TriPlus	2118
FOCUS GC + FOCUS GC + TriPlus	3484
FOCUS GC + TRACE GC Ultra + TriPlus	8718
DSQ II + TRACE GC Ultra + TriPlus	13502
PolarisQ + TRACE GC Ultra + TriPlus	9742

Table 7. Heat Output: for GC + TriPlus Configuration, continued

Instrument	Heat Output (in BTU h^{-1})
DSQ II + FOCUS GC + TriPlus	8268
PolarisQ + FOCUS GC + TriPlus	4508
TRACE GC Ultra + DSQ II+ TRACE GC Ultra + TriPlus	20102
FOCUS GC + DSQ II+ TRACE GC Ultra + TriPlus	14868
TRACE GC Ultra + PolarisQ + TRACE GC Ultra + TriPlus	16342
FOCUS GC + PolarisQ + TRACE GC Ultra + TriPlus	11108

Instrument Arrival

This paragraph gives an overview of shipping and receiving procedures, installation, and training. The information in this chapter will give you an idea of what to expect when your TriPlus autosampler arrives.

Shipping Information

Instruments are shipped in the manner agreed upon at the time of sale. There are two categories of shipping: *Origin* (FOB) and *Destination* (FOB, CIP, or CIF).

Origin

For instruments shipped Ex-Works, also known as FOB (Free On Board) Origin, damages incurred in shipment are the responsibility of the purchaser and the carrier. However, Thermo Fisher Scientific will assist with filing claims and (billable) repairs, if necessary.

Destination

There are two types of Destination shipping: CIP (Carriage and Insurance Paid to) Destination and CIF (Carriage Insurance and Freight paid to) Destination. These are also known as FOB Destination. For all types of Destination shipping, Thermo Fisher Scientific will file claims against the carrier for any damages incurred in shipment. Note, however, that Thermo Fisher Scientific will not accept liability for damage not recorded on the receiving documents.

Receiving Instruments

Thermo Fisher Scientific instruments are shipped by electronic equipment carriers who specialize in the handling of delicate equipment. Occasionally, however, equipment inadvertently gets damaged in transit.

Please take the following precautions when receiving the instruments:

- Check carefully for obvious damage or evidence of rough handling, including triggering of Shockwatch® and Tiltwatch™ labels.

- If external damage is apparent, note this fact on all copies of the receiving documents, and describe briefly the extent of the damage. The driver should sign (or initial) next to your comments to signify agreement with your observations. It may be necessary to photograph damaged areas for claims purposes. Contact the appropriate Thermo Fisher Scientific office to report the damage.
- Move the cartons to a protected location, preferably to the installation site. Leave the boxes as complete as possible, and do not unpack the components unless absolutely necessary.

The Field Service Engineer (FSE) will also check for damage and verify the completeness of shipment. This will protect you in the event of missing or damaged components.

Note Freight insurance requires that obvious damage be noted on the receiving documents.

Installation

The FSE will unpack and completely install the system, including optional instruments. The FSE will also initialize settings, verify that the system is operating according to specifications, and familiarize you with the system. Contact your local Thermo Fisher Scientific office for details.

If you have not purchased the installation option, refer to "Installation" on page 16, for installation instructions.

Training

Valuable training on Thermo Fisher Scientific instruments and software is offered worldwide. Experience has shown that maximum value can be derived from a scientific instrument if there is one person who has a major responsibility for the instrument. We recommend that you designate a key operator to manage the operation and maintenance of the TriPlus autosampler. We also recommend that the key operator receive training at the Thermo Fisher Scientific Institute, at your site, or at one of the local Thermo Fisher Scientific offices. For information on courses or enrollment, contact the following Thermo Fisher Scientific office:

Thermo Fisher Scientific S.p.A.
Strada Rivoltana km 4
20090 Rodano (MI)
Italy
++39 02 95059 35

Installation

This paragraph contains unpacking instructions and a brief tutorial you must know before you can continue the installation process.

Verify Site Preparation

Before the TriPlus can be installed, your laboratory must be in compliance with the guidelines and requirements reported in the *Site Preparation and Installation Manual* of your GC system and in the "Space and Load Requirements" on page 6 of this manual.

Unpacking the Instrument

You should have already inspected the exterior of the shipping container for damage as described in "Instrument Arrival" on page 15. Carefully unpack the instrument and do the following:

1. Check the contents of each box or crate against the packing list to verify the shipment is complete.
2. Inspect each item for damage.
   a. If equipment is damaged, keep boxes and their equipment in their existing condition and immediately notify the carrier.
   b. Submit a damage claim directly to the carrier, and send a copy (including any shortage claims) to your authorized Thermo Fisher Scientific sales representative.
   c. Do not return any equipment to the dealer or the factory without prior factory authorization.

Lift and Carry the X and Y Axes

This operation must be performed by TWO persons who must stand each on one side of the X-axis and put their hands underneath it.

TriPlus Autosampler Components

According to the TriPlus configuration AS, HS or SPME, the following components are available:

- Standard Vials tray with tray support
- Thermostatted (HC) Vials tray with tray support
- 4-solvent washing station
- 2-solvent washing station
- Fast washing station
- HS incubation oven
- Fiber conditioning station
- Bar code reader
- Fan station

Table 8. Autosampler Components Accommodation Criteria

Option	TriPlus AS	TriPlus HS	TriPlus SPME
Injector into which the sample may be introduced	S/SL, PTV, PKD, PPKD, OCI	S/SL, PTV, PKD, PPKD,	S/SL, PTV
2-solvents washing station	Yes	Yes	Yes
4-solvent washing station	Yes	Yes	Yes
Fast washing station	Yes	No	No
Standard sample tray	54 and 150 pos.	54 pos.	54 pos.
Thermostatted sample tray	33 and 96 pos.	No	No
Well plates sample tray	For 2 well plates	No	No
Incubation oven	No	Yes	Yes
Fiber conditioning	No	No	Yes

Installation Process

Start the installation process as described in the **TriPlus Autosampler Operating Manual**.